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# The status and habitat preferences of birds associated with coastal forest and grassland in Kilwa District, southern Tanzania

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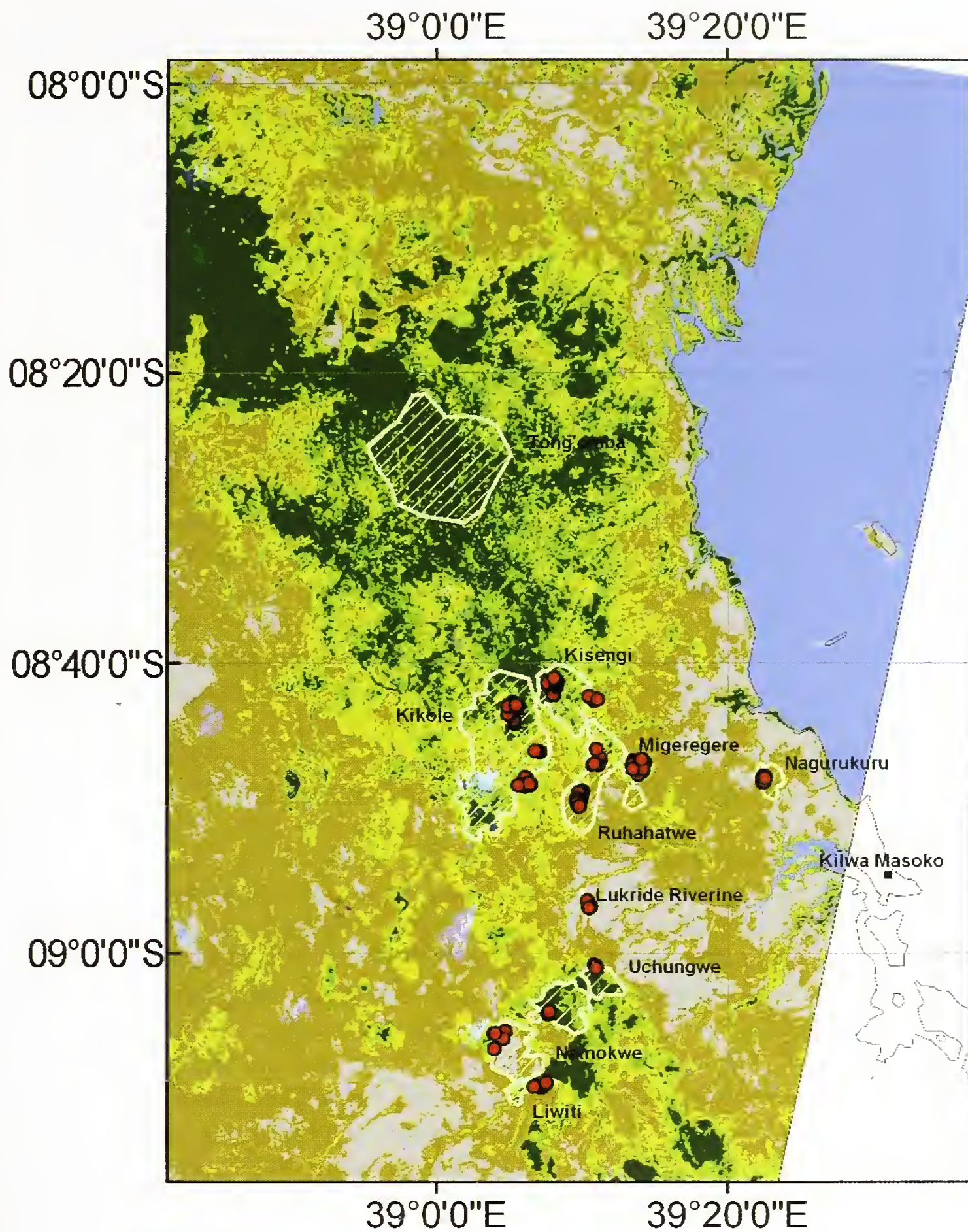
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**Statut et préférences d'habitat des oiseaux associés à la forêt côtière et la savane du district de Kilwa, Tanzanie du sud.** Les forêts côtières de l'Afrique de l'Est sont un 'hotspot' de diversité et d'endémisme aviaire, mais il n'y a eu que peu d'inventaires des oiseaux associés aux forêts côtières en Tanzanie du sud, en particulier dans le district de Kilwa. Dans ce district, la structure des forêts continue d'être substantiellement modifiée par l'exploitation forestière, et de vastes étendues de forêt encore relativement intactes sont menacées par la production projetée de biofuel. À présent, on ne dispose que de peu de données sur les oiseaux de cette région et les effets probables des modifications de la structure forestière. L'objectif principal de l'étude exécutée en juin–septembre 2008, dont les résultats sont présentés ici, était d'arriver à mieux connaître l'association entre les espèces et les habitats et, si possible, de dresser la carte de distribution des espèces d'oiseaux de la région. La présence est rapportée de trois espèces Quasi Menacées et de 11 espèces confinées au biome des forêts côtières. La carte de distribution de l'endémique Pririt de Reichenow *Batis capensis reichenowi* est présentée et la présence d'une population précédemment inconnue du Barbican olivâtre *Stactolaema olivacea* est signalée. Les résultats confirment que la majorité des espèces d'intérêt pour la conservation sont capables d'occuper une variété d'habitats forestiers et de savane, mais la plupart de ces espèces n'était présente qu'à l'intérieur de forêts vastes ou juste à côté de celles-ci. Les auteurs postulent que la perte d'habitat causée par la production de biofuels est une menace plus immédiate que les changements dans la structure des forêts dues à l'exploitation forestière.

**Summary.** The coastal forests of East Africa are a hotspot of avian diversity and endemism, but there have been few surveys of the birds associated with coastal forests in southern Tanzania, and Kilwa District in particular. Within Kilwa District, logging for timber continues to substantially modify the structure of the forests and plans for biofuel cultivation threaten large tracts of still relatively undisturbed forest. At present, there are few baseline data on the birds of this region and the probable impacts of changes in forest structure. The primary purpose of this study, conducted in June–September 2008, was to provide an insight into bird–habitat associations and, where possible, to map the bird species in the region. We report the presence of three Near Threatened and 11 biome-restricted species, and map the presence of the endemic Reichenow's Batis *Batis capensis reichenowi*. We also report the presence of a previously unknown population of Green Barbet *Stactolaema olivacea*. Our results confirm that most species of conservation concern are capable of occupying a range of forest and savanna habitats, but most were only present in or adjacent to extensive tracts of forest. We postulate that habitat loss from biofuels poses a more immediate threat to birds than changes in forest structure as a result of logging.

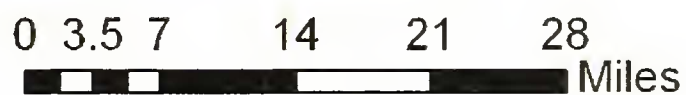
**T**he coastal forests of East Africa represent a biodiversity hotspot of global importance, not least for their avifauna (Burgess *et al.* 1998, Burgess & Clarke 2000). Although estimates vary according to the region included and the taxonomy employed, *c.*31 bird species are endemic to this biome many of which are classified as Endangered or Vulnerable (BirdLife International 2011c). These forests once formed a fairly continuous tract from Somalia to Mozambique, but clearance and logging have contributed to extensive habitat fragmentation. Biological surveys of the remaining

coastal forests have been highly uneven, focusing mainly on those patches in Kenya and northern Tanzania (*cf.* Fanshawe 1994, Burgess & Clarke 2000, Borghesio *et al.* 2008). With the exception of the Rondo and Litipo Forest Reserves in southern coastal Tanzania, the remaining area of coastal forest, *i.e.* from the Rufiji River in Tanzania to southern Mozambique, is virtually unsurveyed (Prins & Clarke 2007; although see Eriksen *et al.* 1994 and Tottrup *et al.* 2005). An analysis of all available botanical data suggests that floristic endemism and diversity in these coastal



**Legend**

- Point count locations
- Forest Reserves
- water
- other habitat
- grassland
- open woodland
- secondary forest
- primary forest



**Figure 1.** Study area showing the main habitat types as derived from satellite imagery. The area in the bottom right-hand corner, in which habitat cover was not derived, lies outside that covered by the satellite image.

Site d'étude montrant les types principaux d'habitat basé sur des images satellitaires. La zone dans le coin droit en bas, dans lequel l'habitat n'est pas indiqué, n'est pas couverte par les images satellitaires.

forests peaks in south-east Tanzania (Burgess & Clarke 2000) and the same may well be true of other taxa, including birds.

The forests of Kilwa District, southern Tanzania, are part of the East African Coastal Forest biome. They comprise a relatively complex matrix of habitats ranging from mangrove and coastal thickets to extensive *Brachystegia*-dominated woodland further inland, with closed-canopy coastal forest along some river valleys and on east-facing slopes (BirdLife International 2011a,b). Their structure is at least partially determined by fire. During the dry season, when the grass understorey is highly flammable, large areas of open grassland are susceptible to burning (Eva & Lambin 2000, Moe *et al.* 2009). However, the forests themselves are thought to be relatively resilient to fire as the presence of a closed canopy prevents the development of a grass understorey and ensures moisture retention (Moe *et al.* 2009).

In recent years, logging for timber has posed a severe threat to this habitat by reducing its overall extent, removing mature trees and altering habitat structure (Oyugi *et al.* 2008). The threat posed by logging in Kilwa District has increased as infrastructure improvements have enhanced accessibility to this previously isolated region and the demand for charcoal and timber has grown due to human population growth (Milledge *et al.* 2007). Logging, even if selective, also alters the dynamics of the system. When trees are removed the canopy is opened, stimulating the development of a grass understorey, which in turn makes the habitat more susceptible to fire, causes tree mortality and further abets understorey development.

Although Kilwa District currently lies outside the East African coastal forests Endemic Bird Area (Stattersfield *et al.* 1998), the few previous surveys of Kilwa have recorded several species of conservation concern. For example, the Near Threatened Southern Banded Snake Eagle *Circaetus fasciolatus* and Plain-backed Sunbird *Anthreptes reichenowi*, subspecies *yokanae*, are present (Baker & Baker 2002, BirdLife International 2011a), although their present status is poorly known. Anecdotal evidence suggests that many of these species are adversely affected by human disturbance, and that they favour forest with minimal understorey and a high proportion of mature trees (Baker & Baker 2002, BirdLife International 2011c). Logging,

even if selective (and thus not resulting in overall habitat loss), may therefore pose a significant direct threat by causing disturbance and removing mature trees, whilst the indirect threats posed by enhanced fire susceptibility may be even greater. Biofuel production represents another severe threat to the region's forests, as 350 km<sup>2</sup> of forest and grassland have been leased to a Netherlands-based company, Bio-Shape, for *Jatropha* cultivation (BioShape 2009), with further large-scale (>50,000 ha) biofuel initiatives planned (Martin *et al.* 2009). However, despite the potential threat of habitat destruction from biofuel production and logging in Kilwa District, no baseline data have been collected and, consequently, the impacts of these activities on bird populations are difficult to predict. The primary purpose of this study was to remedy this situation by providing insight into the bird-habitat associations and, where possible, to map and document the status of bird species in the region.

## Methods

### *Study area*

Our study focused on an area of *c.*37,000 km<sup>2</sup> between 08°40'–09°20'S and 39°00'–39°30'E (Fig. 1). The area comprises 4,396 km<sup>2</sup> of primary forest, 2,642 km<sup>2</sup> of secondary forest, 6,078 km<sup>2</sup> of open woodland, 14,771 km<sup>2</sup> of wooded grassland, 5,032 km<sup>2</sup> of open grassland and 2,444 km<sup>2</sup> of other habitats. Several of the forests are owned and managed by local communities (Maganga & Odgaard 2002) whereas other larger tracts are government-owned. In the latter, despite formal protection, logging is rarely prevented. Small areas, mostly near villages, are used for subsistence crops and, at the time of the survey, *c.*20% of the area had been leased for *Jatropha* cultivation, although this project subsequently collapsed. Between June and August 2008, 222 sampling points were established using a Global Positioning System (GPS). The location of these points was somewhat constrained by access and safety concerns (African Elephants *Loxodonta africana*), but were chosen to ensure that a broad geographic area was covered and that the complete spectrum of forest and more open habitat types was represented. Nevertheless, the locations were somewhat clustered and the interior of some of the larger forested areas were not surveyed (Fig. 3d).

## Bird surveys

We surveyed the avifauna at sampling sites using 15-minute point counts, recording all birds heard or seen within 50 m of the observer. Counts were conducted between dawn (c.06.00 hrs) and 09.00 hrs. At all times, including when travelling to and from study sites, opportunistic observations of noteworthy species were also documented. All observers except one (DA) had considerable previous experience of conducting avian surveys in East Africa and were very familiar with the bird species associated with coastal forest. DA was given extensive training prior to commencing surveys. To supplement the point counts, mist-nets were erected by LM & KK at several sites. Although no additional species were trapped, several of the more elusive species such as Narina's Trogon *Apaloderma narina* (not heard throughout the survey) and Scaly-throated Honeyguide *Indicator variegates*, were caught.

## Vegetation surveys

At each of the point count locations, canopy, understorey and tree measurements were taken. Canopy cover was estimated as an average of spherical densitometer readings taken at four random locations within 50 m of the point count location. Understorey was measured in two ways: as a proxy of the extent of understorey shrub development, a 2-m pole was swung round at breast height at five locations within 50 m of the point count location and the number of woody stems it touched counted. To measure the lower understorey, five 2 m × 2 m plots were randomly chosen within 50 m of the point count location, and the percentage of grass, woody herbaceous and bare cover estimated in each. Tree sizes and densities were measured using circumference at breast height (CBH). These results were used to elucidate relationships between canopy and ground cover, to understand the habitat requirements of different bird species and to ground-truth satellite images to produce a habitat map of the entire study area, and objectively identify distinct habitat types (for details see Maclean *et al.* 2009; Fig. 1).

## Satellite image classification

A relatively cloud-free (cloud cover = 9%) Landsat 5<sup>TM</sup> satellite image of the study area from May 2008 was obtained from the US Geological Survey Earth Resources Observation and Science Centre

(<http://glovis.usgs.gov/>). Landsat 5 satellites have seven sensors (Bands) onboard, capable of obtaining images using different wavelengths. The reflectance values in different wavelength bands are useful at distinguishing different vegetation types (Lillesand *et al.* 2004). By adapting a method based on calculating reflectance value ratios and performing principal components analysis as recommended by Trisurat *et al.* (2000) and fully described in Maclean *et al.* (2009), we statistically combined the information recorded by the different sensors into a single metric that objectively distinguishes different vegetation types, hereafter referred to as principal component 1 (PC1). This was confirmed by comparing the values of PC1 to our field vegetation measurements. For canopy cover of less than 50%, the correlation between canopy cover and PC1 was extremely high, with a  $r^2$  value of 0.97. For canopy cover in excess of 50%, the correlation between CBH and PC1 was higher with a  $r^2$  of 0.87. This makes ecological sense as both primary and secondary forest possess dense canopy cover, but the former is typically characterised by more mature trees. By performing cluster analysis on the remotely derived metric, we were able to objectively identify five distinct habitat types of relevance to our study area (and several others such as swamp, urban, bare ground, etc., of less relevance). In practise this means that five meaningful habitat types could be distinguished using a combination of canopy cover and the CBH of trees. These are shown in Table 1.

**Table 1.** Definitions of habitat type used in this study.  
CBH = tree circumference at breast height.

**Tableau 1.** Définitions du type d'habitat utilisé dans cette étude.  
CBH = circonférence des arbres à hauteur de poitrine.

Habitat type	Canopy cover	Mean CBH
Open grassland	<10%	Any
Wooded grassland	10–30%	Any
Open woodland	30–50%	Any
Secondary forest	>50%	<50 cm
Primary forest	>50%	>50 cm

## Results

### Bird–habitat associations

A total of 5,824 individuals comprising 167 positively identified species was recorded. A small

number of birds could not be identified to species level and these were excluded from subsequent analyses. When a particular habitat type was assigned to each point count (defined using canopy cover and mean CBH; see Table 1), and the survey effort in different habitat types accounted for, most of these species exhibited a preference for a particular habitat type (i.e. more than 50% of records were within that habitat type), although rather few species recorded more than once were restricted entirely to one habitat type. A total of 21 species was recorded mainly in primary forest (Appendix 1), 18 in secondary forest (Appendix 2) and a further 26 in forest generally (Appendix 3). Fifteen species were recorded primarily in open woodland (Appendix 4), 30 in wooded grassland (Appendix 5), 20 in open grassland (Appendix 6) and a further five in grassland generally (Appendix 7). The remaining 28 species were not recorded primarily in one habitat type and could thus be described as generalists (Appendix 8).

It should be noted, however, that in some instances only a small number of individuals of a species were recorded so habitat preferences cannot be ascribed with certainty or may reflect the accidental occurrence of some species more usually associated with different habitat types.

The majority of species we recorded are widespread within Tanzania or Africa generally (and are of little conservation concern; cf. Brown *et al.* 1982, Urban *et al.* 1986, 1997, Fry *et al.* 1988, 2000, Keith *et al.* 1992, Fry & Keith 2004, Nilsen *et al.* 2009). However, several species are restricted to the coastal forest biome and a few of these are also listed as Near Threatened (BirdLife International 2011c). Two taxa, Rondo Green Barbet *Stactolaema olivacea woodwardii* and Reichenow's Batis *Batis capensis reichenowi* are potentially distinct species and, if so, are of conservation interest.

### Notes on selected species

(NT) = Near Threatened.

#### **Southern Banded Snake Eagle** *Circaetus fasciolatus* (NT)

This coastal forest biome-restricted species was recorded once during point counts in open grassland, but on the edge of the large forested region in the north-west of our study area (Fig. 2a). The fact that it was recorded in open grassland

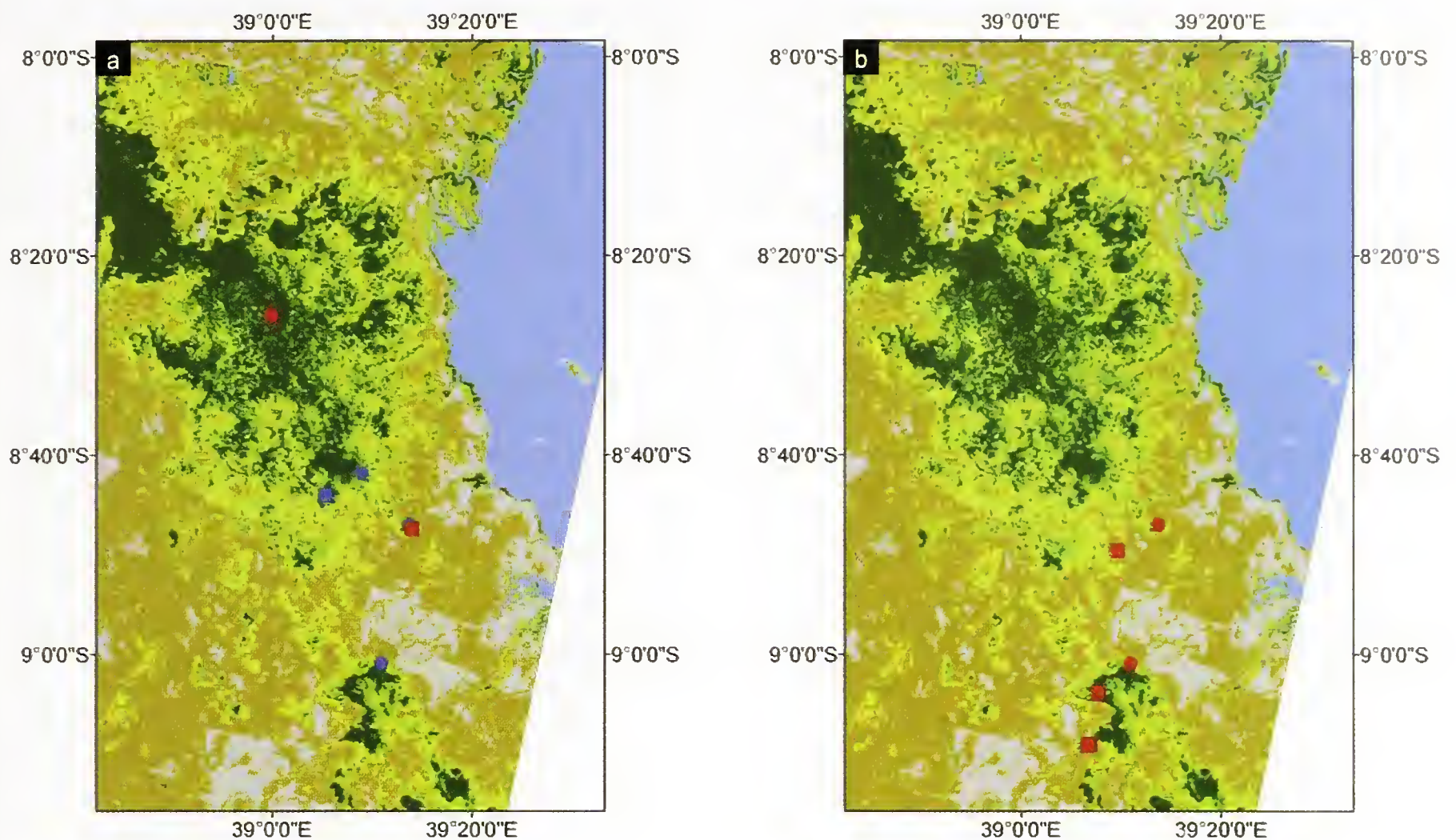
is unlikely to be an indication of its true habitat preferences, but probably more accurately reflects the difficulties associated with observing this species within closed-canopy forest. Individuals silently perch-hunting within the forest canopy or flying above the canopy are likely to have gone undetected. Three individuals were observed elsewhere during the course of the survey, with two in open woodland and one in closed-canopy forest. Furthermore, four separate individuals were also heard calling at dawn suggesting a wider distribution than the point counts would indicate. This eagle occurs from southern Somalia to northern KwaZulu-Natal and is associated with dense coastal and riverine forest, although it is known from other habitats including open village land (Brown *et al.* 1982; N. Baker *in litt.* 2010). It may occur more widely albeit at low densities in the study area, but the absence of extensive forest close to the coast might account for its scarcity.

#### **Bateleur** *Terathopius ecaudatus* (NT)

Recorded once in the north of the study area (Fig. 2a), flying over secondary forest surrounded by open grassland, and once opportunistically in the Tong'omba Forest Reserve also in the north of the study area, which is densely forested. The species occurs widely throughout Africa, typically in open broadleaf woodland rather than more open grassland, as it depends on trees for nesting (Brown *et al.* 1982). In Tanzania it is still common and widespread throughout the south-east woodlands (Baker & Baker *in prep.*).

#### **Brown-headed Parrot** *Poicephalus cryptoxanthus*

Twenty-three individuals of this coastal forest biome-restricted species (BirdLife International 2011c) were recorded, mostly in forested habitats, but also in open grassland (three times) and open woodland (six times). It was also recorded opportunistically at five further locations. All records were from the forested region in the north of the study area, but there was one from a small forest fragment in the south, albeit close to an extensive forest (Fig. 3c). The species' preferred habitat is described as forest-savannah mosaic (Fry *et al.* 1988) or mopane woodland and thicket-clump savanna (Dowsett-Lemaire & Dowsett 2006). Our results suggest this parrot may be dependent on larger forests in the study area, but visits a variety of habitats in adjacent localities.



**Figure 2.** Distribution of Near Threatened species recorded during surveys of coastal forests in Kilwa District, Tanzania, in June–August 2008. Circles represent opportunistic records and squares records obtained during point-count surveys.

Distribution des espèces Quasi Menacées enregistrées pendant l'inventaire des forêts côtières du district de Kilwa, Tanzanie, en juin–août 2008. Les cercles représentent des observations faites de façon opportuniste, les carrés celles faites pendant les comptages par point.

(a) Southern Banded Snake Eagle *Circaetus fasciolatus* (red) and Bateleur *Terathopius ecaudatus* (dark blue)

(b) Plain-backed Sunbird *Anthreptes reichenowi*

### **Mangrove Kingfisher** *Halcyon senegaloides*

The species was recorded opportunistically in mangroves near Kilwa Masoko, where it was relatively common. It is probably quite common throughout coastal mangroves (N.-Baker *in litt.* 2010).

### **Rondo Green Barbet** *Stactolaema olivacea woodwardii*

The conservation status of this taxon depends on which taxonomic evaluation of the Green Barbet group as a whole is accepted. One view is that Green Barbet comprises two isolated populations (at Ngoye Forest in South Africa and the Rondo Plateau in Tanzania) and that two additional species, *S. belcheri* and *S. olivacea*, occur in Malaŵi, south-east Kenya and elsewhere in Tanzania (e.g. Clancey 1980a,b). In contrast, Dowsett-Lemaire & Dowsett (1987) and Fry *et al.* (1988), among others, treat the group as one species with five subspecies: *olivacea* (south-east Kenya

and north-east Tanzania), *howelli* (the Udzungwe and Mahenge mountains in central Tanzania), *rungeensis* (highlands of south-west Tanzania and northern Malaŵi), *woodwardi* (disjunctly in the Ngoye Forest and Rondo Plateau) and *belcheri* (Mount Namuli in north-west Mozambique and formerly Mount Thyolo in southern Malaŵi). A Green Barbet resembling *woodwardi* was recorded twice during our survey in the forested region in the south (Fig. 4a). The majority of this forest is on Unchungwe Mountain, a plateau at *c.*300–500 m. The forest itself is not typical of the region, being higher in altitude and in places dominated by cycads *Cycadophyta* spp. Geographically, this record is closest to the Rondo Plateau population, but nevertheless separated by *c.*100 km and is slightly lower in altitude. Our record represents a previously undocumented population of Green Barbet, and the taxonomic status of the population within the study area warrants further investigation.

### **African Green Tinkerbird** *Pogoniulus simplex*

Sixteen individuals of this coastal forest biome-restricted species were recorded, mostly in forested habitats, but also in open woodland (five times) and wooded grassland (once), always close to forested areas. It was also recorded opportunistically at one additional location, also in forest. The species is probably forest dependent. Although most records were from the larger forests in the study area, it was also recorded in smaller forest fragments near Nangurukuru and the species was widely distributed (Fig. 3c). The species is thought to favour dense forest understorey (Fry *et al.* 1988) or mid-altitude and montane rainforest, or riverine forest at lower altitudes (Dowsett-Lemaire & Dowsett 2006). It may also be dependent on mistletoes, although the exact extent of this dependence is unknown (Dowsett-Lemaire & Dowsett 2006). The species thus probably prefers closed-canopy secondary forest. It occurs in many of the forested areas throughout the region, including fairly degraded remnants (Baker & Baker in prep.).

### **Brown-breasted Barbet** *Lybius melanopterus*

Two individuals of this coastal forest biome-restricted species were recorded during point-count surveys, both in open grassland, but adjacent to the largest forest of the study area (Fig. 3c). However, it was also recorded in Kilwa Masoko away from forest. It is known to favour forest edge and more open habitats (Fry *et al.* 1988) and is probably capable of occupying a range of open and more lightly wooded habitats. However, the species does not appear to be common in the study area, but is probably quite common in thickets and

bushveld near the coast and in riverine habitat (N. Baker *in litt.* 2010).

### **Fischer's Greenbul** *Phyllastrephus fischeri*

Five individuals of this coastal forest biome-restricted species were recorded during point-count surveys, all in secondary forest. The species was also observed opportunistically in Tong'omba Forest in the north. In the study area, it appears to be confined to the large forested region in the north (Fig. 3b). This greenbul prefers lowland forest and thickets, and favours areas with at least some understorey present (Urban *et al.* 1997). Elsewhere within the region it is a relatively common species (F. Dowsett-Lemaire *in litt.* 2011), so the absence of records may be due to low detection and it is difficult to ascertain how widely distributed the species is within our study area. However, it is likely to be tolerant of fairly degraded forest.

### **Tiny Greenbul** *Phyllastrephus debilis*

The nominate race of this coastal forest biome-restricted species was recorded once during point-count surveys, in open woodland adjacent to the extensive forested region in the south of the study area. It was also observed opportunistically at three additional locations, all in forest (Fig. 3a). Tiny Greenbul occurs in dense scrub, lowland forest, second growth and forest-woodland mosaics, but it is generally absent from *Brachystegia* (Urban *et al.* 1997). It is probably dependent on large tracts of non-*Brachystegia* forest and is unlikely to be widespread throughout the study area.

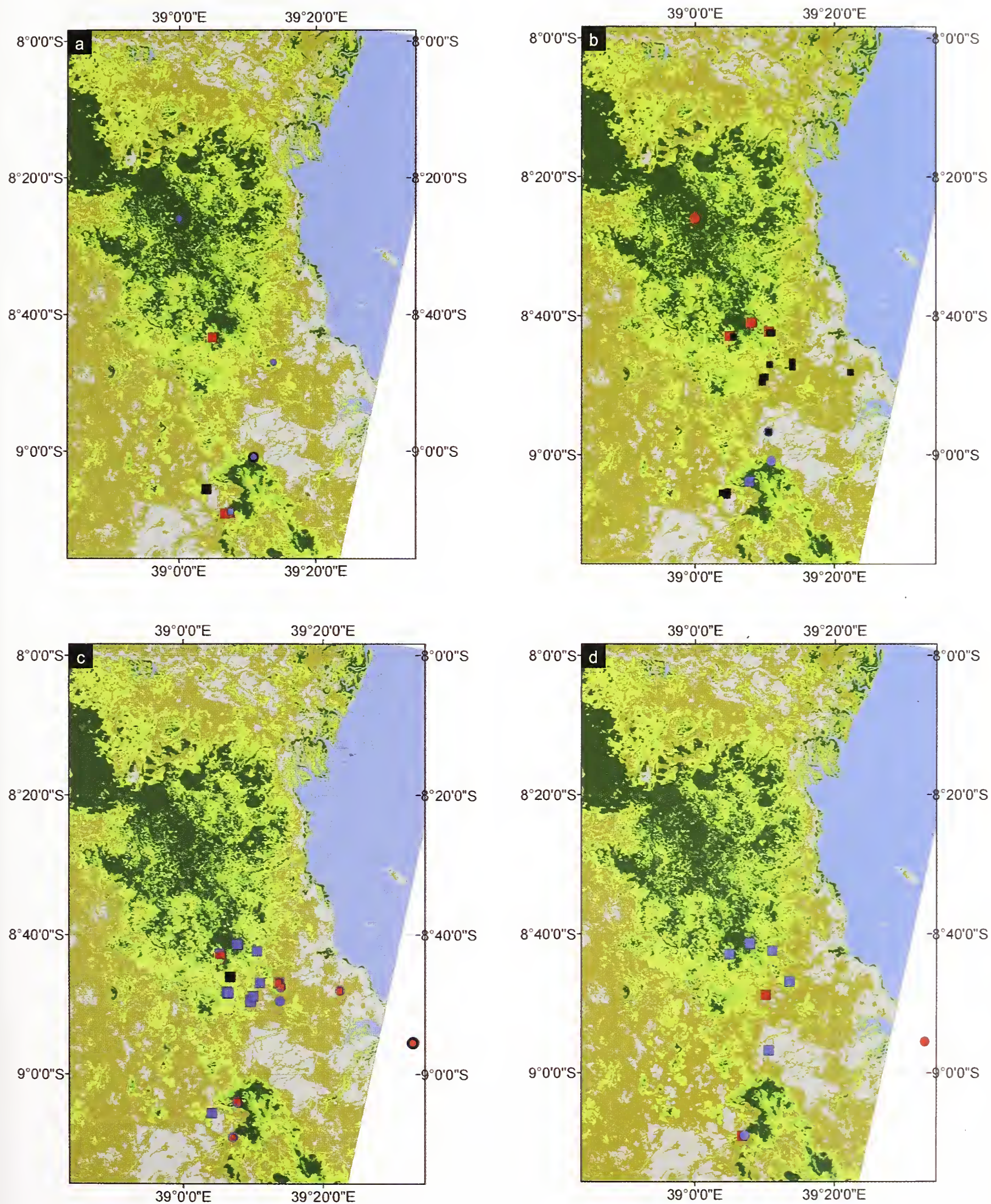
**Figure 3.** (page opposite) Distribution of coastal forest biome-restricted species recorded during surveys of coastal forests in Kilwa District, Tanzania, in June–August 2008. Circles represent opportunistic records and squares records obtained during point-count surveys.

Distribution des espèces confinées au biome de la forêt côtière enregistrées pendant l'inventaire des forêts côtières du district de Kilwa, Tanzanie, en juin–août 2008. Les cercles représentent des observations faites de façon opportuniste, les carrés celles faites pendant les comptages par point.

- (a) Tiny Greenbul *Phyllastrephus debilis* (blue), Kretschmer's Longbill *Macrosphenus kretschmeri* (red) and Black-bellied Glossy Starling *Lamprotornis corruscus* (black)
- (b) Pale Batis *Batis soror* (blue), Chestnut-fronted Helmetshrike *Prionops scopifrons* (red) and Fischer's Greenbul *Phyllastrephus fischeri* (black)
- (c) Brown-headed Parrot *Poicephalus cryptoxanthus* (blue), African Green Tinkerbird *Pogoniulus simplex* (red) and Brown-breasted Barbet *Lybius melanopterus* (black)
- (d) Uluguru Violet-backed Sunbird *Anthreptes neglectus* (blue) and Mouse-coloured Sunbird *Cyanomitra veroxii* (red)

**Kretschmer's Longbill** *Macrosphenus kretschmeri*  
 Three individuals of this coastal forest biome-restricted species were recorded during point-count surveys, two in secondary forest and one in open woodland. All three records were from the larger forests in the study area (Fig. 3a). The species favours the interior of forests with

dense undergrowth or forest edge with thickets, provided vines are present (Urban *et al.* 1997; N. Baker *in litt.* 2010). It appears to be dependent on larger forest fragments in the study region, but may be capable of occupying more degraded forest, provided there are vines.





### **Reichenow's Batis** *Batis capensis reichenowi*

Reichenow's Batis is usually treated as a subspecies of Cape Batis *B. capensis* (Urban *et al.* 1997) or as a species in its own right, but might be a subspecies of Forest Batis *B. mixta* (Britton 1980, Dowsett-Lemaire 1989). Recent evidence suggests that the taxon is genetically nested within Forest Batis, although it is morphologically distinct (Fjeldså *et al.* 2006). This batis is confined to coastal forests in south-east Tanzania and our five records (Fig. 4b) represent a slight extension to the north-west of the previously known range (Baker & Baker 2009). Including our records, the total range is approximately 11,100 km<sup>2</sup>, which would be sufficient for the species to qualify as Vulnerable against IUCN criteria based on Extent of Occurrence (BirdLife International 2009) given that the population is also probably declining. The presence of a species with a range of less than 50,000 km<sup>2</sup> would be sufficient to qualify forests in Kilwa and Lindi Districts as a secondary Endemic Bird Area (Stattersfield *et al.* 1998). In the study area, the taxon appears to be confined mainly to primary forests, with two records from secondary forest. All records are from around the large forested area in the south. It is probably fairly widespread in suitable habitat within this forest tract.

### **Pale Batis** *Batis soror*

Twenty-one individuals of this coastal forest biome-restricted species were recorded, all during point-count surveys and most frequently in wooded grassland, but also in open grassland (twice), open woodland (four times), secondary forest (five times) and primary forest (twice). It does not appear to be dependent on forest as some records were away from forested habitat (Fig. 3b). The species occurs in a variety of woodland and forest habitats (Keith *et al.* 1992) and was found in nearly all of the areas surveyed. It is probably quite common throughout the region.

### **Uluguru Violet-backed Sunbird** *Anthreptes neglectus*

Twelve individuals of this coastal forest biome-restricted species were recorded during point-count surveys, primarily in primary forest, but with three records from secondary forest and one in open woodland. It was recorded at many forest sites in the study area and does not appear to be

confined to larger fragments (Fig. 3d). The species is probably widespread in forests throughout the study area. Nevertheless, Fry & Keith (2004) suggest it is a rare species with only 44 recent site records. More recently collected data have boosted this total to 247 records, which includes the 12 recorded during this study (Baker & Baker in prep.). The relatively high abundance in our study area is therefore noteworthy.

### **Plain-backed Sunbird** *Anthreptes reichenowi yokanae* (NT)

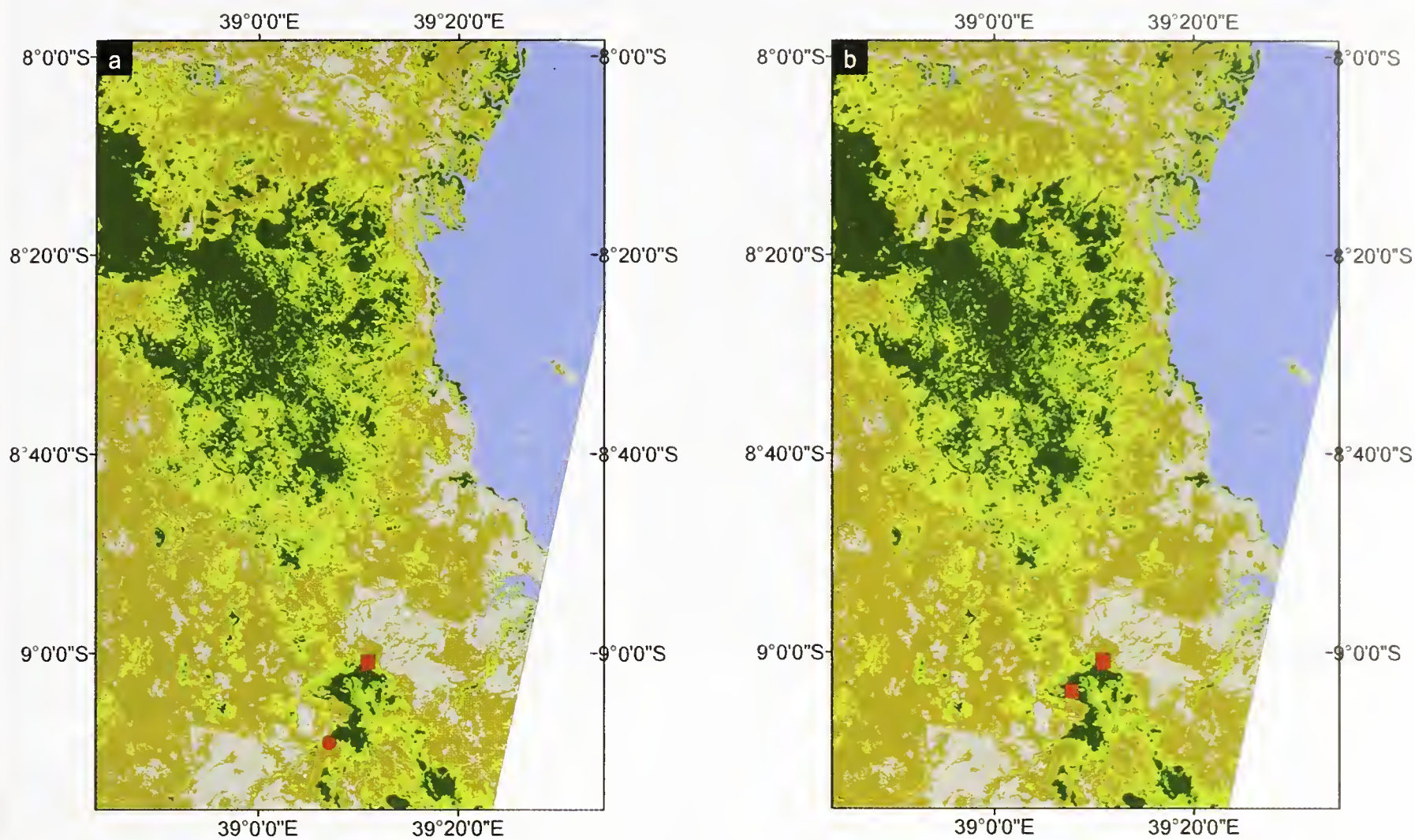
Twelve individuals of this coastal forest biome-restricted species were recorded, primarily in forested habitats, with two records in open woodland. It was also recorded opportunistically at one additional location. Most records were from the larger forest region in the north of the study area, with one from a smaller forest fragment near the northern forested region (Fig. 2b). The species is capable of occupying a variety of lowland and semi-deciduous forest types, including degraded areas (Fry & Keith 2004). It is probably most abundant within the large forested area, but may be sparsely distributed in smaller fragments elsewhere. Plain-backed Sunbird is well known just to the south in Lindi District, in south-east Tanzania (N. Baker *in litt.* 2010).

### **Mouse-coloured Sunbird** *Cyanomitra veroxii*

This coastal forest biome-restricted species was recorded twice during point-count surveys, once in wooded grassland and once in primary forest (Fig. 3d). It was also recorded opportunistically in thickets around Kilwa Masoko. The species occurs in various wooded and forested habitats, almost always near the coast (Keith & Urban 2004). Our records, one more than 40 km from the coast, suggest that in Kilwa District the association with coastal habitat is less strong. Overall, the species is unlikely to be abundant within the study area, although it is widespread at low densities in coastal bush habitats ((Baker & Baker in prep.).

### **Chestnut-fronted Helmetshrike** *Prionops scopifrons*

This coastal forest biome-restricted species was recorded once during point-count surveys, in secondary forest in the large forested region in the south of the study area (Fig. 3b). It was also recorded opportunistically at two further locations



**Figure 4.** Distribution of noteworthy species of uncertain taxonomy recorded during surveys of coastal forests in Kilwa District, Tanzania, in June–August 2008. Circles represent opportunistic records and squares records obtained during point-count surveys.

Distribution des espèces remarquables à taxonomie incertaine enregistrées pendant l'inventaire des forêts côtières du district de Kilwa, Tanzanie, en juin–août 2008. Les cercles représentent des observations faites de façon opportuniste, les carrés celles faites pendant les comptages par point.

(a) Rondo Green Barbet *Stactolaema olivacea woodwardii*

(b) Reichenow's Batis *Batis capensis reichenowi*

within the same general area. The species occurs in forest and dense bushveld, but is rare and declining throughout much of its range (Urban *et al.* 1997). In our study area it is probably quite rare and associated with larger forest tracts, although further surveys in the north of the area may reveal its presence there.

#### **Black-bellied Glossy Starling** *Lamprolornis corruscus*

This coastal forest biome-restricted species was recorded once during point-count surveys in open grassland away from any forested area. It was also recorded opportunistically at one additional location in the same general area (Fig. 3a). Black-bellied Glossy Starling is capable of occupying a variety of habitats, including more open areas (Fry *et al.* 2000). The species is probably widely but sparsely distributed throughout the study area (Baker & Baker in prep.).

#### **Concluding remarks**

Of the 13 biome-restricted species known from the Kilwa District Coastal Forest Important Bird Area (IBA) (Baker & Baker 2002), we located all but the Zanzibar Red Bishop *Euplectes nigroventris*, a wetland species not associated with woodland habitats. We also confirmed the presence of Kretschmer's Longbill and Brown-breasted Barbet, two species thought to occur, but not certainly known to be present. Additionally, we recorded Mangrove Kingfisher, in mangrove swamps around Kilwa Masoko. This species was not initially noted as being present within the area encompassed by the IBA. Two additional species merit mention: Rondo Green Barbet and Reichenow's Batis. The taxonomy of these species is uncertain, but should they prove to be separate species from the closely related African Green Barbet and Forest Batis, respectively, the avian importance of the area would be enhanced greatly. Even if not elevated to specific status, the presence



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of these two taxa highlights the ornithological importance of these forests.

Most of the noteworthy species we recorded appear to be capable of occupying a variety of habitat types, although their associations are difficult to quantify due to the paucity of records. Of the biome-restricted species recorded more than once, only Fischer's Greenbul was confined entirely to forest habitats and all five records of this species were from secondary forest. This suggests that logging-induced changes in forest structure do not pose a significant immediate threat to these species. A more dominant pattern that emerges from our work is the tendency for most of the species of conservation concern to occur in or adjacent to larger forested tracts. This suggests that habitat loss and fragmentation, such as that expected as a result of biofuel production, pose a greater threat to these species than logging, which presents a challenge for forest conservation practitioners. At present, the most effective tool for coastal forest conservation in Tanzania is thought to be Participatory Forest Management (Campbell *et al.* 2007), a legal process under which rural communities can take control over their local forests. The end result is known as a Village Land Forest Reserve and is governed by a management plan, developed in a partnership between the rural community and the District Forestry Office, and local byelaws. Of necessity, such initiatives are small-scale and often implemented in smaller forest fragments. This process ensures sustainable exploitation of forest resources (Blomley *et al.* 2006) and undoubtedly benefits forest birds. Nevertheless, a less intensive method, whereby

conservation effort and resources are spread more thinly over a larger area, is likely to be a more effective means of avian conservation. At present, no such initiatives exist.

Most of the species of conservation concern recorded during our survey are those expected to occur, and are present in most of the other coastal forests in southern Tanzania (Baker & Baker 2002). Species of conservation concern accounted for 10% of all species recorded but only 3% of records. This suggests that most persist at low densities over a wide area, again highlighting the need for large-scale conservation measures. Nevertheless, our surveys also highlighted the importance of several forested areas within Kilwa District that are not currently included within Kilwa District Coastal Forests IBA. Although this is primarily because the designation process was restricted to sites that, at the time, had officially defined boundaries (N. Baker *in litt.* 2010), it is worth highlighting several additional areas. Foremost is the Uchungwe Forest Block located between the Mitaurure and Rungo Forest Reserves shown on the Kilwa District Coastal Forests IBA map in Baker & Baker (2002). This forested area was the only one in which Rondo Green Barbet was found and was one of only two areas in which Reichenow's Batis was found. It also hosts the Near Threatened Southern Banded Snake Eagle and Plain-backed Sunbird. The Nainokwe Coastal Forest area adjoining Uchungwe is also important, hosting Reichenow's Batis as well as other biome-restricted species such as Brown-headed Parrot, African Green Tinkerbird and Chestnut-fronted Helmetshrike. We also highlight the importance of Migeregere and Kisangi Forests. These sites host seven and five biome-restricted species respectively. Both host Southern Banded Snake Eagle and the former also harbours Plain-backed Sunbird. Ruhatwe and Kikole also hosted the former species and Ruhatwe the latter.

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#### Legend to figures on facing page

**Figure 5.** Brown-hooded Kingfisher / Martin-chasseur à tête brune *Halcyon albiventris*, Kikole, Tanzania, July 2008 (J. Bray)

**Figure 6.** Böhm's Bee-eater / Guêpier de Böhm *Merops boehmi*, Migeregere, Tanzania, July 2008 (D. Andrews)

**Figure 7.** Brown-breasted Barbet / Barbican à poitrine brune *Lybius melanopterus*, Kikole, Tanzania, July 2008 (J. Bray)

**Figure 8.** African Broadbill / Eurylaime du Cap *Smithornis capensis*, Migeregere, Tanzania, July 2008 (D. Andrews)

**Figures 9.** Eastern Bearded Scrub Robin / Agrobate à moustaches *Cercotrichas quadrivirgata*, Pugu Hills, Tanzania, August 2008 (J. Bray)

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## Appendices / Annexes

Habitat preferences of species recorded during point-count surveys. The preference score is an indication of the proportion of recorded birds occurring in a particular habitat type, weighted by survey effort in each habitat type. A score of 1 indicates that all birds were recorded in the habitat type with which it is associated. Forest generalists are those species for which the majority of birds were recorded in forest habitat, but with no particular association to either primary or secondary forest. Similarly, grassland generalists are those species for which the majority of birds were recorded in grassland, but with no particular association with either open or wooded grassland. Note that in some cases only a small number of individuals were recorded so the habitat association cannot be ascribed with confidence. Conservation status: NT = Near Threatened, LC = Least Concern and BR = biome-restricted (see BirdLife International 2011c). TX indicates that there is taxonomic uncertainty associated with the species in question (see Results).

Préférence d'habitat des espèces enregistrées pendant les comptages par point. Le score de préférence est une indication de la proportion des oiseaux enregistrés fréquentant un type d'habitat particulier, pesé par effort d'inventaire dans chaque type d'habitat. Un score de 1 signifie que tous les oiseaux ont été enregistrés dans le type d'habitat avec lequel il est associé. Les généralistes forestiers sont les espèces dont la majorité des individus a été enregistrée en forêt, sans association particulière avec la forêt primaire ou secondaire. De la même façon, les généralistes savaniques sont les espèces dont la majorité des individus a été enregistrée en savane, sans association particulière avec la savane herbeuse ou arborée. Noter que dans certains cas seulement un petit nombre d'individus a été enregistré et que l'association avec l'habitat ne peut donc être établie avec certitude. Statut de conservation : NT = Quasi Menacé (Near Threatened), LC = de préoccupation mineure (Least Concern) et BR = confiné à un biome (cf. BirdLife International 2011c). TX indique que le statut taxonomique de l'espèce en question est incertain.

**Appendix 1.** Species recorded mainly in primary forest (mean circumference at breast height of trees >50 cm, canopy cover >50%).

**Annexe 1.** Espèces observées principalement dans la forêt dense primaire (circonférence moyenne des arbres à hauteur de poitrine >50 cm, couverture de la canopée >50%).

Species	Scientific name	Status	Preference score	Number recorded
Shikra	<i>Accipiter badius</i>	LC	1.00	1
African Wood Owl	<i>Strix woodfordii</i>	LC	1.00	2
White-eared Barbet	<i>Stactolaema leucotis</i>	LC	1.00	1
Rondo Green Barbet	<i>S. olivacea woodwardii</i>	TX	1.00	1
Red-fronted Tinkerbird	<i>Pogoniulus pusillus</i>	LC	1.00	3
Red-tailed Ant Thrush	<i>Neocossyphus rufus</i>	LC	1.00	11
White-browed Robin Chat	<i>Cossypha heuglini</i>	LC	1.00	1
Black-and-white Mannikin	<i>Lonchura bicolor</i>	LC	1.00	3
Little Swift	<i>Apus affinis</i>	LC	0.86	3
Crested Guineafowl	<i>Guttera pucherani</i>	LC	0.85	107
Retz's Helmetshrike	<i>Prionops retzii</i>	LC	0.73	14
Hooded Vulture	<i>Necrosyrtes monachus</i>	LC	0.72	2
Reichenow's Batis	<i>Batis capensis reichenowi</i>	TX	0.72	5
Grey Tit-flycatcher	<i>Myioparus plumbeus</i>	LC	0.72	2
Uluguru Violet-backed Sunbird	<i>Anthreptes neglectus</i>	BR	0.69	12
Purple-crested Turaco	<i>Tauraco porphyreolophus</i>	LC	0.66	11
Little Sparrowhawk	<i>Accipiter minullus</i>	LC	0.66	7
Ashy Flycatcher	<i>Muscicapa caerulea</i>	LC	0.57	18
Klaas's Cuckoo	<i>Chrysococcyx klaas</i>	LC	0.56	3
Black-throated Wattle-eye	<i>Platysteira peltata</i>	LC	0.56	4

**Appendix 2.** Species recorded mainly in secondary forest (mean circumference at breast height of trees <50 cm, canopy cover >50%).

**Annexe 2.** Espèces observées principalement dans la forêt dense secondaire (circonférence moyenne des arbres à hauteur de poitrine <50 cm, couverture de la canopée >50%).

Species	Scientific name	Status	Preference score	Number recorded
Bateleur	<i>Terathopius ecaudatus</i>	NT	1.00	1
Lizard Buzzard	<i>Kaupifalco monogrammicus</i>	LC	1.00	1
Mottled Spinetail	<i>Telacanthura ussheri</i>	LC	1.00	4
Narina's Trogon	<i>Apaloderma narina</i>	LC	1.00	2
European Bee-eater	<i>Merops apiaster</i>	LC	1.00	4
Common Scimitarbill	<i>Rhinopomastus cyanomelas</i>	LC	1.00	7
Scaly-throated Honeyguide	<i>Indicator variegatus</i>	LC	1.00	1
Green-backed Woodpecker	<i>Campethera cailliautii</i>	LC	1.00	2
Bearded Woodpecker	<i>Dendropicos namaquus</i>	LC	1.00	1
Chestnut-fronted Helmetshrike	<i>Prionops scopifrons</i>	BR	1.00	1
African Paradise Flycatcher	<i>Terpsiphone viridis</i>	LC	1.00	1
Fischer's Greenbul	<i>Phyllastrephus fischeri</i>	BR	1.00	5
Southern Black Flycatcher	<i>Melaenornis pammelaina</i>	LC	1.00	3
Yellow-bellied Waxbill	<i>Estrilda melanotis</i>	LC	1.00	2
Böhm's Spinetail	<i>Neafrapus boehmi</i>	LC	0.80	16
Red-capped Robin Chat	<i>Cossypha natalensis</i>	LC	0.78	10
Lesser Honeyguide	<i>Indicator minor</i>	LC	0.53	3
Kretschmer's Longbill	<i>Macrosphenus kretschmeri</i>	BR	0.53	3

**Appendix 3.** Species recorded mainly in forest (canopy cover >50%), but not specifically in primary or secondary forest.

**Annexe 3.** Espèces observées principalement en forêt dense, mais pas spécifiquement primaire ou secondaire.

Species	Scientific name	Status	Preference score	Number recorded
Yellow-streaked Greenbul	<i>Phyllastrephus flavostriatus</i>	LC	0.87	49
Square-tailed Drongo	<i>Dicrurus ludwigii</i>	LC	0.84	156
Plain-backed Sunbird	<i>Anthreptes reichenowi</i>	NT	0.76	12
Forest Weaver	<i>Ploceus bicolor</i>	LC	0.74	106
Eastern Nicator	<i>Nicator gularis</i>	LC	0.72	55
Blue-mantled Crested Flycatcher	<i>Trochocercus cyanomelas</i>	LC	0.70	35
Black-headed Batis	<i>Batis minor</i>	LC	0.70	13
Bearded Scrub Robin	<i>Cercotrichas quadrivirgata</i>	LC	0.69	11
Olive Sunbird	<i>Cyanomitra olivacea</i>	LC	0.67	101
Livingstone's Flycatcher	<i>Erythrocerus livingstonei</i>	LC	0.66	88
Crowned Hornbill	<i>Tockus alboterminatus</i>	LC	0.66	65
African Goshawk	<i>Accipiter tachiro</i>	LC	0.64	7
Green-backed Camaroptera	<i>Camaroptera brachyura</i>	LC	0.64	166
Trumpeter Hornbill	<i>Bycanistes bucinator</i>	LC	0.59	45
Brown-hooded Kingfisher	<i>Halcyon albiventris</i>	LC	0.59	16
Collared Sunbird	<i>Anthreptes collaris</i>	LC	0.57	246
Yellow-fronted Tinkerbird	<i>Pogoniulus chrysoconus</i>	LC	0.57	23
Yellow-breasted Apalis	<i>Apalis flavida</i>	LC	0.54	87
African Green Tinkerbird	<i>Pogoniulus simplex</i>	BR	0.53	16

Species	Scientific name	Status	Preference score	Number recorded
Yellow-bellied Greenbul	<i>Chlorocichla flaviventris</i>	LC	0.53	124
African Green Pigeon	<i>Treron calvus</i>	LC	0.52	20
Little Bee-eater	<i>Merops pusillus</i>	LC	0.52	20
Yellow-rumped Tinkerbird	<i>Pogoniulus bilineatus</i>	LC	0.51	37
African Broadbill	<i>Smithornis capensis</i>	LC	0.51	16
Böhm's Bee-eater	<i>Merops boehmi</i>	LC	0.51	9
Brown-headed Parrot	<i>Poicephalus cryptoxanthus</i>	BR	0.51	23

**Appendix 4.** Species recorded mainly in open woodland (canopy cover 30–50%).

**Annexe 4.** Espèces observées principalement dans la forêt claire (couverture de la canopée 30–50%).

Species	Scientific name	Status	Preference score	Number recorded
Crested Francolin	<i>Francolinus sephaena</i>	LC	1.00	1
Red-necked Spurfowl	<i>Francolinus afer</i>	LC	1.00	1
Hadada Ibis	<i>Bostrychia hagedash</i>	LC	1.00	1
African Pygmy Kingfisher	<i>Ceyx pictus</i>	LC	1.00	2
African Grey Hornbill	<i>Tockus nasutus</i>	LC	1.00	1
Greater Honeyguide	<i>Indicator indicator</i>	LC	1.00	1
Tiny Greenbul	<i>Phyllastrephus debilis</i>	BR	1.00	1
Jameson's Firefinch	<i>Lagonosticta rhodopareia</i>	LC	1.00	1
Terrestrial Brownbul	<i>Phyllastrephus terrestris</i>	LC	0.88	6
Hamerkop	<i>Scopus umbretta</i>	LC	0.81	3
Peters's Twinspot	<i>Hypargos niveoguttatus</i>	LC	0.78	3
Red-headed Weaver	<i>Anaplectes rubriceps</i>	LC	0.64	2
Livingstone's Turaco	<i>Tauraco livingstonii</i>	LC	0.61	7
Black-and-white Shrike-flycatcher	<i>Bias musicus</i>	LC	0.58	6
Black-collared Barbet	<i>Lybius torquatus</i>	LC	0.52	4

**Appendix 5.** Species recorded mainly in wooded grassland (canopy cover 10–30%).

**Annexe 5.** Espèces observées principalement dans la savane boisée (couverture de la canopée 10–30%).

Species	Scientific name	Status	Preference score	Number recorded
Laughing Dove	<i>Streptopelia senegalensis</i>	LC	1.00	1
Speckle-throated Woodpecker	<i>Campethera scriptoricauda</i>	LC	1.00	1
White Helmetshrike	<i>Prionops plumatus</i>	LC	1.00	3
African Penduline Tit	<i>Anthoscopus caroli</i>	LC	1.00	2
Flappet Lark	<i>Mirafraga rufocinnamomea</i>	LC	1.00	1
Piping Cisticola	<i>Cisticola fulvicapilla</i>	LC	1.00	8
Miombo Wren Warbler	<i>Calamonastes undosus</i>	LC	1.00	2
Kurrichane Thrush	<i>Turdus libyanus</i>	LC	1.00	3
Blue Waxbill	<i>Uraeginthus angolensis</i>	LC	1.00	5
Red-faced Crombec	<i>Sylvietta whytii</i>	LC	0.95	4
Yellow-throated Petronia	<i>Petronia superciliaris</i>	LC	0.94	9
Pale Flycatcher	<i>Bradornis pallidus</i>	LC	0.93	4

Brubru	<i>Nilaus afer</i>	LC	0.91	6
Green-winged Pytilia	<i>Pytilia melba</i>	LC	0.86	6
Spectacled Weaver	<i>Ploceus ocularis</i>	LC	0.83	13
Singing Cisticola	<i>Cisticola cantans</i>	LC	0.79	6
Green-capped Eremomela	<i>Eremomela scotops</i>	LC	0.78	8
Common Waxbill	<i>Estrilda astrild</i>	LC	0.75	235
Grosbeak Weaver	<i>Amblyospiza albifrons</i>	LC	0.70	6
Brown-necked Parrot	<i>Poicephalus robustus</i>	LC	0.68	10
Wire-tailed Swallow	<i>Hirundo smithii</i>	LC	0.64	14
Scarlet-chested Sunbird	<i>Chalcomitra senegalensis</i>	LC	0.63	46
Yellow-fronted Canary	<i>Serinus mozambicus</i>	LC	0.62	7
Pale Batis	<i>Batis soror</i>	BR	0.62	21
Brown-crowned Tchagra	<i>Tchagra australis</i>	LC	0.61	2
Striped Kingfisher	<i>Halcyon chelicuti</i>	LC	0.61	4
Black-crowned Tchagra	<i>Tchagra senegalus</i>	LC	0.56	6
Red-billed Firefinch	<i>Lagonosticta senegala</i>	LC	0.56	5
Fork-tailed Drongo	<i>Dicrurus adsimilis</i>	LC	0.53	64
Mouse-coloured Sunbird	<i>Cyanomitra veroxii</i>	BR	0.52	2

**Appendix 6.** Species recorded mainly in open grassland (scattered trees, canopy cover <10%).

**Annexe 6.** Espèces observées principalement dans la savane herbeuse (arbres espacés, couverture de la canopée <10%).

Species	Scientific name	Status	Preference score	Number recorded
Cattle Egret	<i>Bubulcus ibis</i>	LC	1.00	21
Southern Banded Snake Eagle	<i>Circaetus fasciolatus</i>	NT	1.00	1
Lilac-breasted Roller	<i>Coracias caudatus</i>	LC	1.00	3
Racket-tailed Roller	<i>Coracias spatulatus</i>	LC	1.00	1
Pied Kingfisher	<i>Ceryle rudis</i>	LC	1.00	1
Swallow-tailed Bee-eater	<i>Merops hirundineus</i>	LC	1.00	5
Brown-breasted Barbet	<i>Lybius melanopterus</i>	BR	1.00	2
African Golden Oriole	<i>Oriolus auratus</i>	LC	1.00	1
Mosque Swallow	<i>Cecropis senegalensis</i>	LC	1.00	2
Short-winged Cisticola	<i>Cisticola brachypterus</i>	LC	1.00	2
Yellow-bellied Eremomela	<i>Eremomela icteropygialis</i>	LC	1.00	1
Arrow-marked Babbler	<i>Turdoides jardineii</i>	LC	1.00	3
Black-bellied Glossy Starling	<i>Lamprotornis corruscus</i>	BR	1.00	1
Southern Grey-headed Sparrow	<i>Passer diffusus</i>	LC	1.00	5
Red-headed Quelea	<i>Quelea erythrops</i>	LC	1.00	89
Red-billed Quelea	<i>Quelea quelea</i>	LC	1.00	602
Yellow-throated Longclaw	<i>Macronyx croceus</i>	LC	1.00	2
African Pipit	<i>Anthus cinnamomeus</i>	LC	1.00	1
African Golden-breasted Bunting	<i>Emberiza flaviventris</i>	LC	1.00	1
Burchell's Coucal	<i>Centropus burchelli</i>	LC	0.51	25

**Appendix 7.** Species recorded mainly in wooded or open grassland (canopy cover <30%).

**Annexe 7.** Espèces observées principalement dans la savane boisée ou herbeuse (couverture de la canopée <30%).

Species	Scientific name	Status	Preference score	Number recorded
African Golden Weaver	<i>Ploceus subaureus</i>	LC	0.83	29
Winding Cisticola	<i>Cisticola galactotes</i>	LC	0.79	17
African Palm Swift	<i>Cypsiurus parvus</i>	LC	0.72	18
Madagascar Bee-eater	<i>Merops superciliosus</i>	LC	0.59	30
Ring-necked Dove	<i>Streptopelia capicola</i>	LC	0.53	102

**Appendix 8.** Species not associated with any particular habitat type.

**Annexe 8.** Espèces n'étant pas associées avec un type d'habitat particulier.

Species	Scientific name	Status	Number recorded
Hildebrandt's Francolin	<i>Francolinus hildebrandti</i>	LC	3
Crowned Eagle	<i>Stephanoaetus coronatus</i>	LC	3
Red-eyed Dove	<i>Streptopelia semitorquata</i>	LC	115
Emerald-spotted Wood Dove	<i>Turtur chalcospilos</i>	LC	170
Green Wood-hoopoe	<i>Phoeniculus purpureus</i>	LC	52
Silvery-cheeked Hornbill	<i>Bycanistes brevis</i>	LC	5
Golden-tailed Woodpecker	<i>Campethera abingoni</i>	LC	5
Cardinal Woodpecker	<i>Dendropicos fuscescens</i>	LC	10
Sulphur-breasted Bushshrike	<i>Telophorus sulfureopectus</i>	LC	13
Grey-headed Bushshrike	<i>Malaconotus blanchoti</i>	LC	19
Black-backed Puffback	<i>Dryoscopus cubla</i>	LC	86
Tropical Boubou	<i>Laniarius aethiopicus</i>	LC	91
Black Cuckooshrike	<i>Campephaga flava</i>	LC	9
White-breasted Cuckooshrike	<i>Coracina pectoralis</i>	LC	3
Eastern Black-headed Oriole	<i>Oriolus larvatus</i>	LC	52
Eastern Saw-wing	<i>Psaldiprocne orientalis</i>	LC	24
Lesser Striped Swallow	<i>Cecropis abyssinica</i>	LC	207
Red-faced Cisticola	<i>Cisticola erythrops</i>	LC	15
Tawny-flanked Prinia	<i>Prinia subflava</i>	LC	70
Red-winged Warbler	<i>Heliolais erythropterus</i>	LC	5
Common Bulbul	<i>Pycnonotus barbatus</i>	LC	238
Sombre Greenbul	<i>Andropadus importunus</i>	LC	101
Yellow White-eye	<i>Zosterops senegalensis</i>	LC	42
White-browed Scrub Robin	<i>Cercotrichas leucophrys</i>	LC	13
Amethyst Sunbird	<i>Chalcomitra amethystina</i>	LC	19
Purple-banded Sunbird	<i>Cinnyris bifasciatus</i>	LC	58
Village Weaver	<i>Ploceus cucullatus</i>	LC	206
Bronze Mannikin	<i>Lonchura cucullata</i>	LC	46